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# Fatal coronary artery thrombosis associated with cannabis smoking

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**A**N unusual case of coronary thrombosis associated with illicit drug use is described. It is suggested that general practitioners and casualty officers should consider the possibility of atypical presentations resulting from drug abuse not made known to the examining doctor.

## Case report

A 32-year-old man complained of sudden onset chest pain but was unable to describe his pain in any detail or give any other information. He was distressed, unable to remain in one position for any length of time, and was rolling around his bed and onto the floor. Physical examination was not possible at first owing to lack of co-operation. The patient was sedated with 4 to 5 mg of intravenous diazepam with the remainder of the ampoule given intramuscularly. He became less distressed and was able to co-operate, complaining of central chest pain with tingling in the fingers of both hands. On examination the patient was not clammy, he was hyperventilating, his pulse rate was 100 beats per minute and his blood pressure was normal; there were no signs of cardiac failure. Arrangements were made for the patient to be transferred to a casualty department, but unfortunately he died before the arrival of the ambulance.

Post-mortem investigations gave the following results. The heart weighed 430g; its configuration was normal and the chambers were in proportion. The myocardium was generally flabby in consistency, with early congestion of the anterior two-thirds of the intra-ventricular septum. There were numerous raised plaques of atheroma throughout both right and left coronary arteries; these were particularly prominent at the start of the circumflex branch of the left coronary

artery where there was coarse focal stenosis of the lumen. One centimetre from the start of the descending branch of the left coronary artery one of the plaques showed ulceration of the intimal lining and adherent to it was a dark red thrombus 0.75 cm in length.

It was subsequently learned that the patient had been smoking cannabis earlier that evening.

## Comment

This case demonstrates two possible adverse effects of cannabis on a person susceptible to ischaemic heart disease.

First, cannabis has a striking effect on heart rate, inducing a tachycardia up to 160 beats per minute or higher, which is achieved within a few minutes of drug absorption. Thereafter a slow decline in heart rate occurs which may take four hours or longer. Aronow has shown in a study of exercise-induced angina that smoking cannabis causes a decreased exercise time of 48 per cent, until angina is experienced, compared with a placebo reduction of 8.6 per cent.<sup>1</sup> This was ascribed to increased oxygen demand coupled with decreased oxygen perfusion leading to earlier experience of chest pain. Charles described one previous case of myocardial infarction occurring some 30 minutes after smoking cannabis:<sup>2</sup> a 25-year-old patient presented with cardiac failure and the infarction was confirmed by electrocardiography (ECG) and enzyme analysis.

Second, the psychological effects of cannabis appear to run in a continuum from mild dysphoria to acute psychotic reactions. Tart has shown that up to 36 per cent of regular cannabis users experienced symptoms during intoxication of distorted body image, acute pains or hallucinations.<sup>3</sup> Halikas has reported that 16 per cent of regular cannabis users experienced anxiety, fearfulness, confusion or aggressive urges as a 'usual occurrence'.<sup>4</sup> Controlled laboratory investigations have

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shown that acute psychological reactions tend to last up to four hours.

The smoking of cannabis causes changes in the cardiovascular system characteristic of stress. If cannabis were to increase the heart rate in a predisposed individual, it seems reasonable to suppose that angina could be precipitated, resulting perhaps in ischaemic damage. Furthermore, should psychoactive effects of the drug cause the patient to react in an atypical manner, he might not take suitable measures to relieve the angina, thus increasing the risk of damaging the myocardium or of precipitating an arrhythmia. The problem of cardiovascular disease associated with cannabis smoking will surely become more common as younger cannabis smokers begin to enter the risk years of ischaemic heart disease.

## References

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